

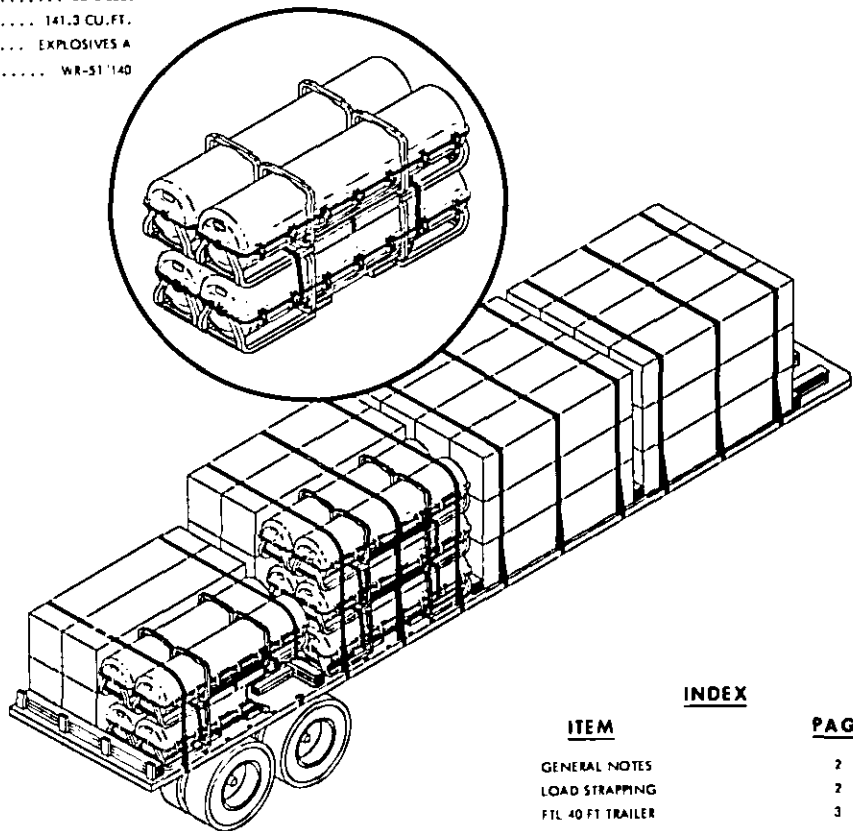
**MILITARY STANDARD**  
**TRUCKLOADING OF HAZARDOUS MATERIALS**  
**BOMB CLUSTER MK 20 MODS 2,3,&4**  
**IN CONTAINER MK 427 MOD 0**  
**FLEET ISSUE UNIT LOAD**

**MIL-STD-1320-65**  
**(NAVY)**

7 JUNE 1974  
 SUPERSEDING-  
 WR-51 65A  
 5 SEPTEMBER 1968

**UNIT LOAD DATA**

NUMBER OF BOMBS PER CONTAINER ..... 1  
 NUMBER OF CONTAINERS PER UNIT LOAD ..... 4  
 GROSS WEIGHT OF ONE CONTAINER ..... 900 LBS.  
 DIMENSIONS ..... L-102 17 32, W-46 5 16, H-51 1 2  
 WEIGHT (APPROX.) ..... 3640 LBS.  
 CUBE ..... 141.3 CU.FT.  
 D.O.T. HAZARD CLASSIFICATION ..... EXPLOSIVES A  
 UNIT LOAD DRAWING ..... WR-51 1140



**NOTES**

1. UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
2. FOR CROSS REFERENCE TO ASSOCIATED PALLETIZING, CONTAINERLOADING AND CARLOADING MILITARY STANDARDS, REFER TO INDEX TO STANDARDS, MIL-HDBK-236 (NAVY).

**INDEX**

ITEM	PAGE
GENERAL NOTES	2
LOAD STRAPPING	2
FTL 40 FT TRAILER	3
LTL 40 FT TRAILER	4 & 5
STACKING & STRAPPING PROCEDURE	6

**FSC 8140**

**AUTHORIZED AND RELEASED  
 FOR HIGHWAY SHIPMENTS  
 ONLY**

*Mr. Gray AWHL* *5/2/74*  
 SIGNATURE TECHNICAL DIRECTION AGENT (TDA) DATE  
*J.E. Kella* *5/2/74*  
 SIGNATURE AIRSYSCOM BY DIRECTION DATE

**ORIGINATOR**

*Charles McRide* *5/2/74*  
 SIGNATURE

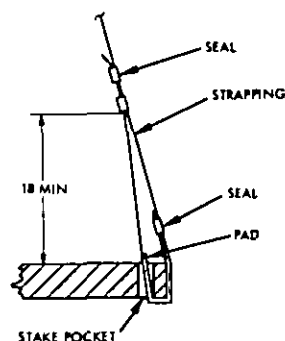
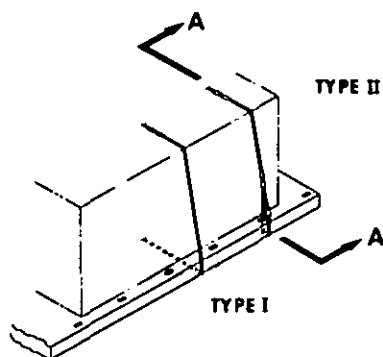
**NAVAL WEAPONS HANDLING LABORATORY**  
**N A D EARLE, NEW JERSEY**

**PAGE 1 OF 8**

## GENERAL NOTES

1. THIS DOCUMENT GIVES DETAILED INSTRUCTIONS FOR TIE-DOWN LOADING THE CLUSTER BOMB AND MODULAR 4 INCH CONTAINER FOR 421 MODEL CONTAINERS SHALL BE INITIALIZED FORMING THE FLEET (SEE UNIT LOAD PAGE 4-14).
2. THE PROCEDURES AND PRACTICES DESCRIBED HEREIN ARE INTENDED FOR 40 FT FLATBED TRAILER WITH THE TRAILER TANDDEM AXLE LOCATED IN THE WESTERN POSITION AT THE EXTREME REAR OF THE TRAILER. OTHER TRAILER WITH METAL FLOOR.
3. WHEN REQUIRED BY THIS STANDARD, TWO ADDITIONAL CONTAINERS ARE STRAPPED TO A FLEET (SEE UNIT LOAD). WHEN THE TANDDEM TRANSPORTATION CYCLE IS COMPLETED, THE TOP TWO CONTAINERS ARE REMOVED BY CUTTING THE TIE TRAPS AND REMOVING THE RESTRAINER. THE LOWER CONTAINERS ARE INITIALIZED PER W-54146 FORMING A FLEET (SEE UNIT LOAD).
4. FOR STACKING AND STRAPPING PROCEDURE (JOINING THE TWO CONTAINER TO THE FLEET (SEE UNIT LOAD), SEE PAGE 4.
5. CHAINS AND STEEL STRAPS MAY BE USED INTERCHANGEABLY FOR TIE-DOWN OF A UNIT LOAD.
6. STEEL STRAPS SHALL BE 2 INCHES AND APPLIED AS SPECIFIED BY THE LOAD STRAPPING REQUIREMENTS BELOW.
7. WHEN USING CHAIN, INSERT A PROTECTION BOARD (LAMINATED DOUBLE 2 X 6 BETWEEN CHAIN AND LOADING). SECURE CHAIN TO THE BOARD WITH FOUR 20# NAILS BY DRIVING THE NAIL THROUGH THE CHAIN INTO THE BOARD AND CLIPPING IT OVER THE CHAIN.
8. THE CHAINS AND LOAD BINDERS SHALL MEET THE FOLLOWING CONDITIONS:
  - a. CHAIN AND FITTINGS SHALL BE 3/8 INCH AND LOAD BINDERS 3/8 INCH CAPACITY.
  - b. CHAINS, FITTINGS, AND LOAD BINDERS SHALL HAVE MINIMUM SAFE WORKING LOAD OF 5000 LBS.
  - c. LOAD BINDERS SHALL BE SAFETY WIRED WITH 14 GAUGE SOFT ANNEALED IRON WIRE OR SECURED USING THE END PIECE OF THE 3/8 CHAIN.
9. PRIOR TO LOADING THE TRAILER AND DURING THE PRELOADING INSPECTION REQUIRED BY NAVORD OP 2165 AND REPORTED ON DD FORM 626, THE CHAINS, FITTINGS, AND LOAD BINDERS SHALL BE INSPECTED FOR STRETCH, GOUGING, BENT LINKS, WEAR AND ANY OTHER NOTICEABLE DEFECTS. THE INSPECTOR SHALL CONFIRM THAT THE CHAINS AND LOAD BINDERS HAVE BEEN INSPECTED AND SHALL SO NOTE IN ITEM NO. 22 OF DD FORM 626. ANY DEFICIENCY SHALL BE CAUSE FOR REJECTION OF A CHAIN OR LOAD BINDER.
10. THE MAXIMUM GROSS WEIGHT OF THE TRACTOR-TRAILER AND THE ALLOWABLE AXLE WEIGHTS ARE THE RESPONSIBILITY OF THE CARRIER. THE CARRIER WILL ADVISE THE SHIPPER OF THESE LIMITATIONS AND THE SHIPPER SHALL LOAD THE TRAILER IN SUCH A MANNER THAT THE TRACTOR-TRAILER WILL NOT EXCEED THESE LIMITATIONS.
11. AFTER BLOCKING AND BRACING HAS BEEN INSPECTED, ATTACH SHIPPING DOCUMENTS TO AN ACCESSIBLE AREA AND ATTACH "EXPLOSIVES" PLACARD TO BOTH SIDES, FRONT AND BACK OF TRAILER.
12. APPLICABLE MATERIAL SPECIFICATIONS: DUNNAGE LUMBER, WW-L-751 NAILS, FF-N-105, TYPE II, STYLE 10, COMMON BRIGHT OR STRAPPING QQ-S-781, TYPE I, CLASS A.
13. FOR GENERAL TRUCKLOADING PROCEDURES REFER TO THE GENERAL TRUCKLOADING DOCUMENT, MIL-STD-1320

## LOAD STRAPPING



SECTION A-A

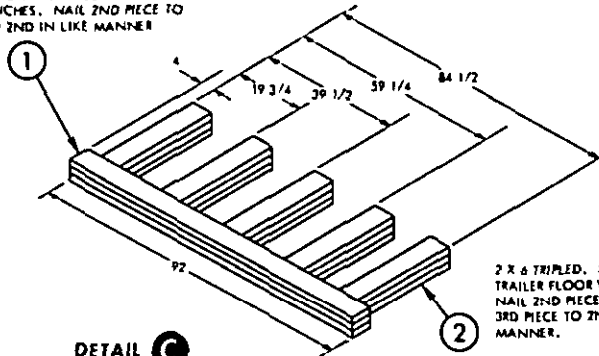
### TIE DOWN STRAPPING

THE FOLLOWING TWO METHODS OF TIE-DOWN STRAPPING ARE APPROVED FOR USE WITH THE SHIPMENT OF LOADS ON FLATBED TRAILERS. STEEL STRAPPING SHALL BE IN ACCORDANCE WITH FEDERAL SPECIFICATION QQ-S-781. STRAP JOINTS SHALL HAVE A MINIMUM TENSILE STRENGTH EQUAL TO 75 PER CENT OF THE STRAP STRENGTH. FOR EACH OF THE TYPES ILLUSTRATED ABOVE IT IS PREFERRED TO POSITION, TENSION AND DOUBLE CRIMP THE STRAP SEALS AT THE TOP OF THE LOAD, IF PRACTICABLE.

TYPE I - CONTINUOUS STRAPPING AROUND THE FLATBED AND THE LOAD.

TYPE II - THE STRAPPING IS SECURED TO THE STAKE POCKETS, ONE PIECE ON EACH SIDE OF THE TRAILER, AND IS BROUGHT UP OVER THE LOAD, TENSIONED, AND SEALED WITH TWO DOUBLE-CRIMPED SEALS ON THE TOP. METHOD OF SECURING STRAPPING TO STAKE POCKET IS SHOWN IN SECTION A-A. THE SHORT END IS ON THE INSIDE AND IS SECURED WITH TWO DOUBLE-CRIMPED SEALS AT A MINIMUM OF 18 INCHES ABOVE THE TRAILER BED. A STAKE POCKET PAD (A SHORT PIECE OF THE SAME STRAPPING 18 INCHES LONG) IS INSERTED BETWEEN THE MAIN STRAP AND THE STAKE POCKET AND IS SECURED TO THE MAIN STRAP WITH A SEAL AS SHOWN.

2 X 6 TRIPLED CENTERED ACROSS TRAILER.  
NAIL 1ST PIECE TO TRAILER FLOOR W 1-16d  
NAIL EVERY 8 INCHES. NAIL 2ND PIECE TO  
1ST AND 3RD TO 2ND IN LIKE MANNER

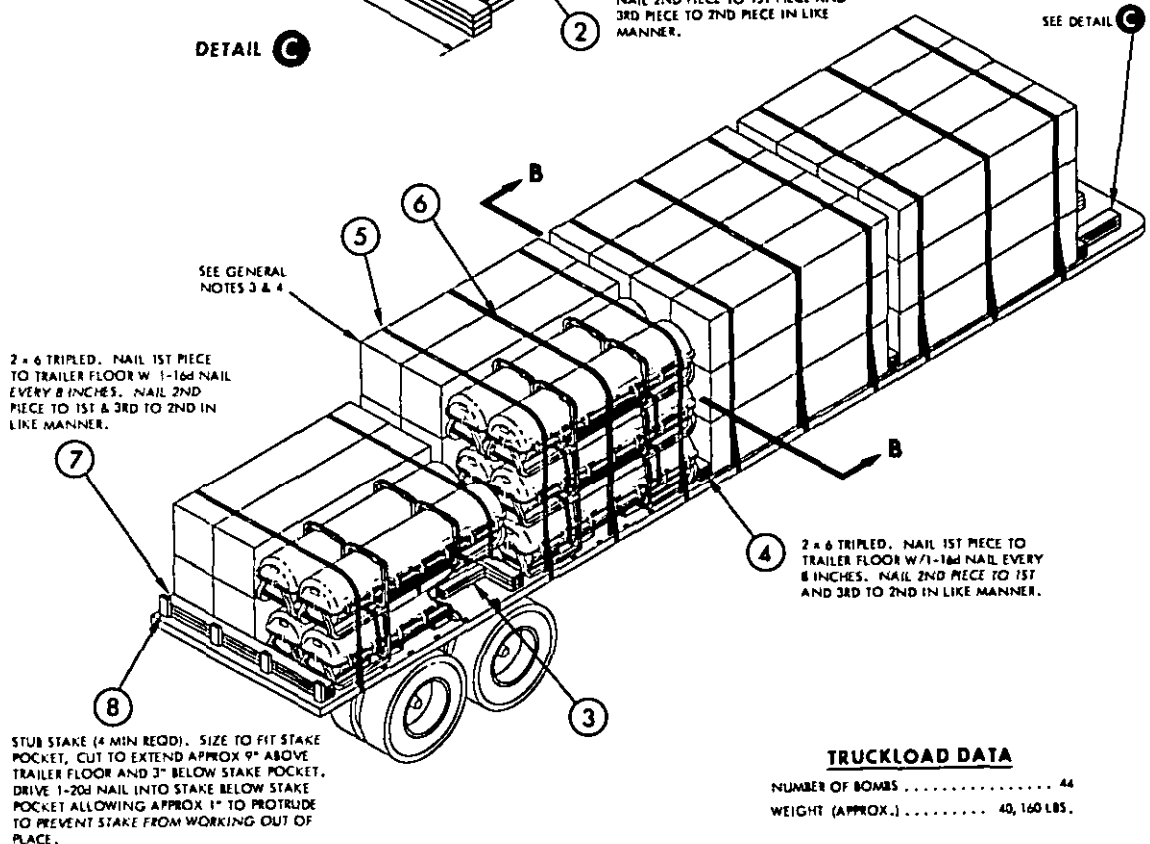


DETAIL C

2 X 6 TRIPLED. NAIL 1ST PIECE TO  
TRAILER FLOOR W/6-16d NAILS.  
NAIL 2ND PIECE TO 1ST PIECE AND  
3RD PIECE TO 2ND PIECE IN LIKE  
MANNER.

**NOTE**

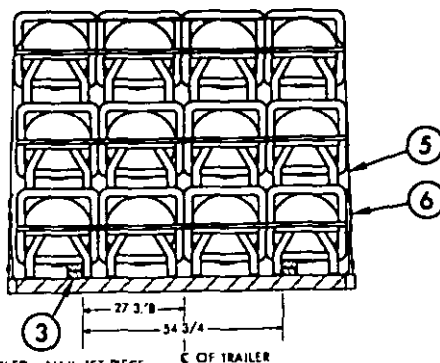
THIS FTL ILLUSTRATES THE USE OF STRAPS AS  
TIE-DOWNS. CHAINS AND LOAD BINDERS  
ARE A AUTHORIZED ALTERNATE (SEE GENERAL  
NOTES 3, 7, 8 & 9) AND SHOULD BE APPLIED  
AS SHOWN ON PAGE 5.



STUB STAKE (4 MIN REQD). SIZE TO FIT STAKE  
POCKET, CUT TO EXTEND APPROX 9" ABOVE  
TRAILER FLOOR AND 3" BELOW STAKE POCKET.  
DRIVE 1-20d NAIL INTO STAKE BELOW STAKE  
POCKET ALLOWING APPROX 1" TO PROTRUDE  
TO PREVENT STAKE FROM WORKING OUT OF  
PLACE.

**TRUCKLOAD DATA**

NUMBER OF BOMBS ..... 44  
WEIGHT (APPROX.) ..... 40,160 LBS.



2 X 4 DOUBLED. NAIL 1ST PIECE  
TO TRAILER FLOOR W 6-20d NAILS.  
NAIL 2ND PIECE TO 1ST IN LIKE  
MANNER.

SECTION B-B

FTL 40 FT TRAILER (FLATBED)

8	STUB STAKE	TO SUIT	4 MIN.	SEE FIELD NOTE		
7	AFT CROSSMEMBER	2 x 6 x 92	3	SEE FIELD NOTE		
6	SEAL	2 x 22 GA. MIN.	88	-	-	-
5	STRAP	2 x .050 LENGTH TO SUIT	11	-	-	-
4	SEPARATOR	2 x 6 x 92	9	SEE FIELD NOTE		
3	SLEEPER	2 x 4 x 24	32	SEE SECTION B-B		
2	CLEAT	2 x 6 x 30	15	SEE DETAIL C		
1	FWD CROSSMEMBER	2 x 6 x 92	3	SEE DETAIL C		
PIECE NO.	DESCRIPTION	SIZE	NO. PCS REQD	NAIL TO	NUMBER	SIZE
LIST OF MATERIALS AND NAILING DATA						

## LTL 40 FT TRAILER (FLATBED)

1. WHEN REQUIRED TO SHIP LESS THAN ONE CONTAINER, SELECT THE CORRECT LOAD PATTERN FROM THE TABLES, LTL 40 FT TRAILER, SHIPPED FROM TABLE 1 AND POSITION THE UNIT LOADS IN THE TRAILER ACCORDINGLY.
2. WHEN LOADING 1, 9 OR 15 UNIT LOADS, BLOCK AND BRACE AS SHOWN ON PAGE 5, ADDITIONALLY THE PLATE FROM UNIT LOAD AS REQUIRED.

**NOTE**

STACK 1/3 CONTAINER HIGH REQUIRE THE DRYER CHAINING STRAP.  
ALL OTHER STACKS REQUIRE 2 TIE-DOWNS.

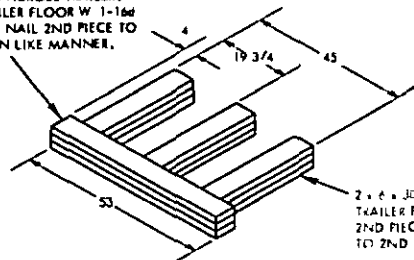
3. WHEN LOADING 7 UNIT LOADS, BLOCK AND BRACE AS SHOWN ON PAGE 5.
4. WHEN LOADING 6 OR LESS UNIT LOADS BLOCK AND BRACE USING THE PRINCIPLES SHOWN ON PAGE 5, THE DETAIL C, PAGE 5, OR DETAIL D, PAGE 4 AT THE REAR OF THE LOAD AS APPROPRIATE.
5. WHEN THE LOAD PLAN REQUIRES THE STACK TO BE 1.5 UNIT LOADS HIGH (THREE OR FIVE CONTAINERS HIGH), THEY SHALL BE STRAPPED TOGETHER AS SHOWN ON PAGE 6. BLOCK, BRACE AND TIE-DOWNS AS SPECIFIED ON PAGE 5.
6. THE LTL SHOWN ON PAGE 5 IS FOR SEVEN UNIT LOADS, AND SHOWS THE CORRECT BLOCKING, BRACING AND TIE-DOWNS FOR A LOAD OF THIS QUANTITY.
7. ACTUAL SHIPPING REQUIREMENT WILL DETERMINE THE NUMBER OF UNIT LOADS TO BE SHIPPED. THE LOAD PATTERN, BLOCKING, BRACING AND TIE-DOWNS SHALL BE IN ACCORDANCE WITH THE APPROPRIATE PARTS OF THE MILITARY STANDARD AND THE GENERAL TRUCKLOADING DOCUMENT, MIL-STD-1320 (NAVY).

TABLE 1

NO. OF UNIT LOADS	LOAD PATTERN*	FWD	NO. OF UNIT LOADS	LOAD PATTERN*	FWD	NO. OF UNIT LOADS	LOAD PATTERN*	FWD
10			7			4		
9			6			3		
8			5			2		
						1		

\* LOAD PATTERN IS THE FLOOR PLAN FOR THE LOAD. THE NUMBER IN THE BLOCKS IS THE NUMBER OF LAYERS OF UNIT LOADS IN THE STACK. THE NUMBER 1.5 INDICATES THAT THE STACK IS 1.5 UNIT LOADS HIGH (OR THREE CONTAINERS HIGH - SEE GENERAL NOTES 3 & 4, PAGE 2).

2 x 6 TRIPLED CENTERED ACROSS TRAILER.  
NAIL 1ST PIECE TO TRAILER FLOOR W/ 1-16d  
NAIL EVERY 8 INCHES. NAIL 2ND PIECE TO  
1ST AND 3RD TO 2ND IN LIKE MANNER.



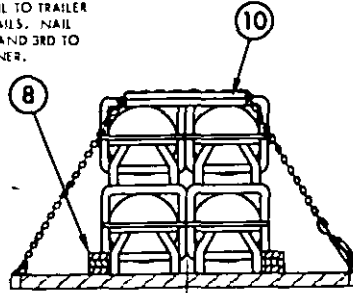
2 x 6 x 30 TRIPLED. NAIL 1ST PIECE TO  
TRAILER FLOOR W/ 6-16d NAILS. NAIL  
2ND PIECE TO 1ST PIECE AND 3RD PIECE  
TO 2ND PIECE IN LIKE MANNER.

**DETAIL D**

FRONT AND REAR BLOCKING  
(SEE LTL NOTE 4)

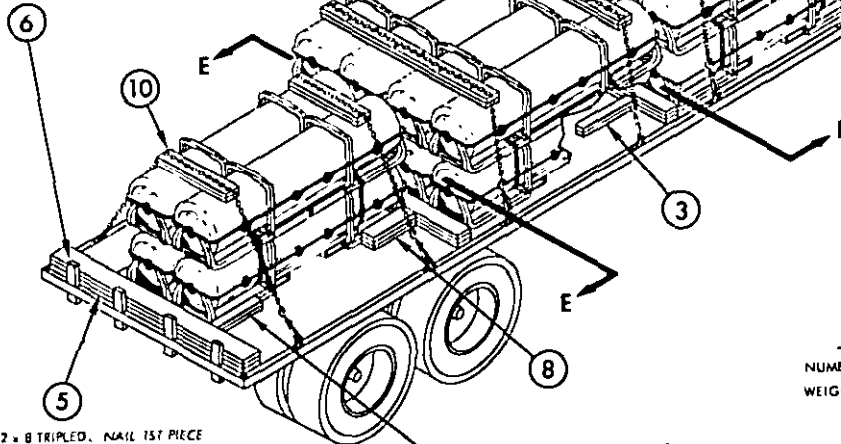
# MIL-STD-1320-65 (NAVY)

2 x 6 TRIPLED. NAIL TO TRAILER FLOOR W. 6-16d NAILS. NAIL 2ND PIECE TO 1ST AND 3RD TO 2ND IN LIKE MANNER.



SECTION E-E

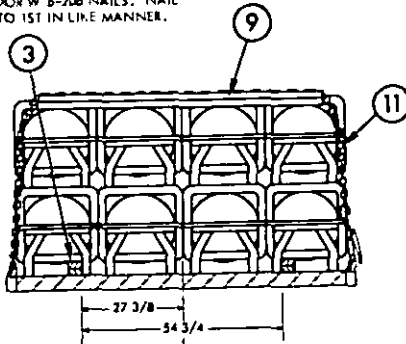
STUB STAKE (4 MIN REQD.). SIZE TO FIT STAKE POCKET. CUT TO EXTEND APPROX 9 INCHES ABOVE TRAILER FLOOR AND 3 INCHES BELOW STAKE POCKET. DRIVE 1-20d NAIL INTO STAKE BELOW STAKE POCKET ALLOWING APPROX 1 INCH TO PROTRUDE TO PREVENT STAKE FROM WORKING OUT OF PLACE.



2 x 8 TRIPLED. NAIL 1ST PIECE TO TRAILER FLOOR W. 1-16d NAIL EVERY 8 INCHES. NAIL 2ND PIECE TO 1ST AND 3RD TO 2ND IN LIKE MANNER.

2 x 4 DOUBLED. NAIL 1ST PIECE TO TRAILER FLOOR W. 6-20d NAILS. NAIL 2ND PIECE TO 1ST IN LIKE MANNER.

2 x 4 DOUBLED. NAIL 1ST PIECE TO TRAILER FLOOR W. 6-20d NAILS. NAIL 2ND PIECE TO 1ST IN LIKE MANNER.



SECTION F-F

## NOTE

THIS LTL ILLUSTRATES THE USE OF CHAINS AS TIE-DOWNS. STEEL STRAPS ARE A AUTHORIZED ALTERNATE (SEE GENERAL NOTES 5 AND 6).

SEE DETAIL C PAGE 3

## LTL TRUCKLOAD DATA

NUMBER OF UNIT LOADS ..... 7  
WEIGHT ..... 25,480 LBS

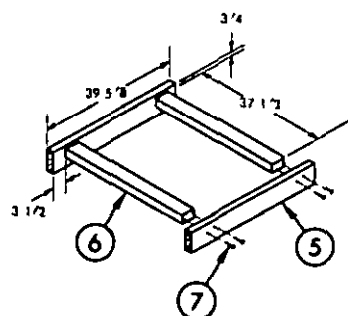
11	CHAIN & BINDER	3" 8 INCH	8	-	-	-
10	PROTECTOR BOARD	2 x 6 x 34	4	DOUBLE LAMINATE	4	Bd
9	PROTECTOR BOARD	2 x 6 x 80	12	DOUBLE LAMINATE	6	Bd
8	BACK UP	2 x 6 x 20	6	SEE SECTION E-E		
7	SLEEPER	2 x 4 x 24	4	SEE FIELD NOTE		
6	STUB STAKE	TO SUIT	4 MIN.	SEE FIELD NOTE		
5	AFT CROSSMEMBER	2 x 8 x 92	3	SEE FIELD NOTE		
4	SEPARATOR	2 x 6 x 92	9	SEE FIELD NOTE		
3	SLEEPER	2 x 4 x 24	24	SEE SECTION F-F		
2	CLEAT	2 x 6 x 30	15	SEE DETAIL C PAGE 3		
1	FWD CROSSMEMBER	2 x 6 x 92	3	SEE DETAIL C PAGE 3		
PIECE NO.	DESCRIPTION	SIZE	NO. PCS REQD	NAIL TO	NUMBER NAILS	SIZE

LIST OF MATERIALS AND NAILING DATA

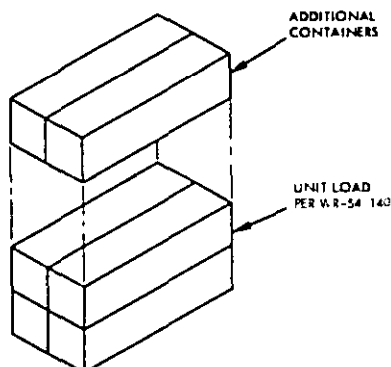
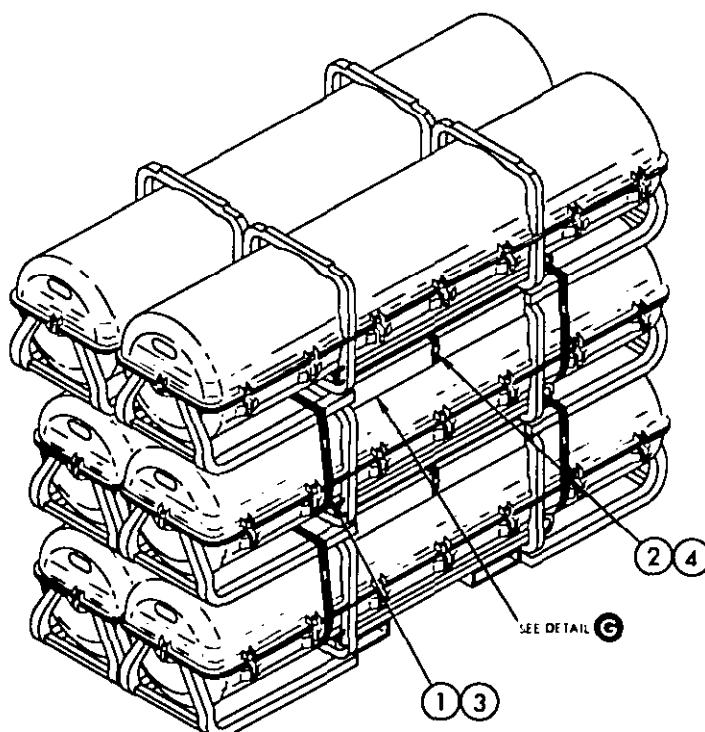
LTL 40 FT TRAILER (FLATBED)

## STACKING AND STRAPPING PROCEDURE

1. POSITION TWO (2) CONTAINERS, FRONT OF UNIT LOAD OF CONTAINER, BEING CARE TO ALIGN TACKLING PANEL, SEE DETAIL H AND MAIN VIEW.
2. POSITION STRAPPING ITEM 1 UNDER THE BODY OF THE CENTER LAYER OF CONTAINERS, AND OVER END OF TOP TWO CONTAINERS, TENSION AND DOUBLE CRIMP SEAL ITEM 1.
3. PARTIALLY ASSEMBLE RESTRAINER - DETAIL G, AS SHOWN, INSERT RESTRAINER SPACER THROUGH BODY LIFT IS EXIST, STRAP TWO CONTAINERS, ASSEMBLE REMAINING PIECE ITEM 1, STRAP ITEMS TOGETHER WITH STRAPPING ITEM 1, THREADING STRAP BETWEEN LAYERS OF CONTAINER, TENSION STRAPPING AND DOUBLE CRIMP SEAL ITEM 1.



**DETAIL G**  
RESTRAINER  
1 REQUIRED



**DETAIL H**

\* .001 COLD ROLLED, HEAT TREATED MAY BE SUBSTITUTED.

REQ.	ITEM	DESCRIPTION	MAT'L	MAT'L SPEC.	DIMENSIONS
8	7	NAIL	STEEL CEMENT CTD	FF-24-105	10d
2	6	RESTRAINER SPACER	WOOD DRESSED	MIL-STD-731	2 x 4 x 29.1 B
2	5	RESTRAINER	WOOD DRESSED	MIL-STD-731	2 x 6 x 29.5 B
1	4	SEAL	STEEL ZINC CTD	COM L	3.4 x 22 GA. MIN.
2	3	SEAL	STEEL ZINC CTD	COM L	1.14 x 22 GA. MIN.
1	2	STRAPPING	STEEL ZINC CTD	GG-S-781 TY, 1 CL. B	3.4 x .005 X 9 FT. 6
2	1	STRAPPING	STEEL ZINC CTD	GG-S-781 TY, 1 CL. B	1.14 x .005 X 12 FT. 6

**LIST OF MATERIALS**

REVIEW ACTIVITY:  
NAVY - OS, AS

PREPARING ACTIVITY:  
NAVY - OS  
(PROJECT NO. 8140-N 233)